

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. Canceled
2. Previously cancelled.
3. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 2 17 wherein:
X¹ is -C(=O)-NH-C(=O)-;
X² is -C(=O)-;
R¹ is acyl of from about ~~15~~ 16 to about 20 carbons;
R³ is alkylene of from 1 to about 3 carbons;
R⁴ is acyl of from about ~~15~~ 16 to about 20 carbons; ~~and~~
R⁶ is a direct bond; and
R⁷ is lower alkylene.
4. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 3 wherein:
R¹ is acyl of from about 17 to about 19 carbons;
R³ is methylene;
R⁴ is acyl of from about 17 to about 19 carbons; and
R⁷ is ethylene.
5. Previously cancelled.
6. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim ~~4~~ 17 wherein said hydrophilic polymer is selected from the group consisting of polyalkyleneoxides, polyvinyl alcohol, polyvinylpyrrolidones, polyacrylamides,

polymethacrylamides, polyphosphazenes, poly(hydroxyalkylcarboxylic acids) and polyoxazolidines.

7. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 6 wherein said hydrophilic polymer comprises a polyalkyleneoxide.

8. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 7 wherein said hydrophilic polymer is selected from the group consisting of polyethylene glycol and polypropylene glycol.

9. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 8 wherein said hydrophilic polymer is polyethylene glycol.

10. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 8 wherein said hydrophilic polymer is PEG3400.

11. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 4 17 wherein said targeting ligand comprises a peptide of the formula:



wherein:

m and n are independently an integer of from 1 to about 100;

Xaa and Zaa are independently selected from the group consisting of natural amino acids and synthetic amino acids;

Yaa is selected from Arginine, Homoarginine, and Lysine-N-acetimidate; and

with the proviso that when Xaa and Zaa are sulfur containing amino acids, Xaa and Zaa may be linked together via a disulfide linkage.

12. (Currently amended, but withdrawn) A ~~compound~~ targeted vesicle composition according to Claim 11, wherein:

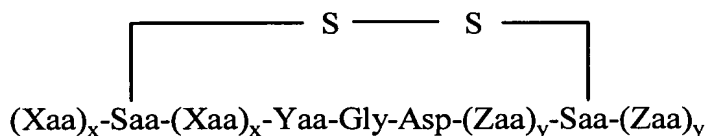
Xaa is Glycine;

Yaa is Arginine;
Zaa is Serine;
n is 1, 2 or 3; and
m is 1.

13. (Currently amended, but withdrawn) A ~~compound~~ targeted vesicle composition according to Claim 12, wherein:
n is 3.

14. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 11, wherein:
Xaa and Zaa comprise an amino acid independently selected from sulfur containing amino acids.

15. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 4 17 wherein said targeting ligand comprises a peptide of the following formula:



wherein:

each x and y is independently an integer of from 0 to about 50;
each Saa is selected from the group consisting of natural and synthetic sulfur containing amino acids, wherein sulfur atoms in said sulfur containing amino acids are linked together by a disulfide bond, as represented by S—S;

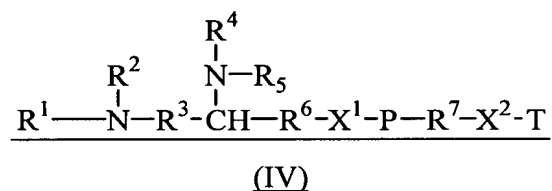
each Xaa and Zaa are independently selected from the group consisting of natural amino acids and synthetic amino acids; and

Yaa is selected from Arginine, Homoarginine, and Lysine-N-acetimide.

16. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 15 wherein:

each Saa is independently selected from the group consisting of D-Cysteine, L- Cysteine, D-Penicillamine and L-Penicillamine.

17. (Currently amended) A targeted vesicle composition for therapeutic or diagnostic use *in vivo* comprising, in an aqueous carrier, ~~lipid, protein or polymer~~ gas filled ~~vesicles~~ liposomes comprising a phosphatidylcholine selected from the group consisting of dioleoylphosphatidylcholine, dimyristoylphosphatidylcholine, dipalmitoylphosphatidylcholine and distearoylphosphatidylcholine, wherein said ~~vesicles~~ liposomes further comprise a compound according to Claim 1 having the formula



wherein:

X¹ and X² are independently a direct bond or a linking atom or group selected from the group consisting of -C(=X³)-, -C(=X³)-N(R⁸)-, and -C(=X³)-N(R⁸)-C(=X³)-;

X³ is -O- or -S-;

R¹ is acyl of from about 16 to about 23 carbons;

R² is hydrogen or lower alkyl;

R³ is alkylene of from 1 to about 10 carbons;

R⁴ is acyl of from about 16 to about 23 carbons;

R⁵ is hydrogen or lower alkyl;

R⁶ is a direct bond;

R⁷ is a direct bond or alkylene of from 1 to about 10 carbons;

R⁸ is hydrogen or lower alkyl;

P is a hydrophilic polymer; and

T is a targeting ligand which targets cells or receptors selected from the group consisting of myocardial cells, endothelial cells, epithelial cells, tumor cells and the glycoprotein GPIIb/IIIa receptor.

18. Canceled

19. Canceled

20. Canceled

21. Canceled

22. (Currently amended) A targeted vesicle composition according to Claim ~~24~~ 17 wherein said phosphatidylcholine comprises dipalmitoylphosphatidylcholine.

23. (Currently amended) A targeted vesicle composition according to Claim ~~20~~ 17 further comprising a ~~wherein said~~ phosphatidylethanolamine is selected from the group consisting of dipalmitoyl-phosphatidylethanolamine, dioleoylphosphatidylethanolamine, N-succinyldioleoyl-phosphatidylethanolamine and 1-hexadecyl-2-palmitoylglycerophosphoethanolamine.

24. (Original) A targeted vesicle composition according to Claim 23 wherein said phosphatidylethanolamine comprises dipalmitoylphosphatidylethanolamine.

25. (Currently amended) A targeted vesicle composition according to Claim ~~20~~ 17 further comprising ~~wherein said phosphatidic acid comprises~~ dipalmitoylphosphatidic acid.

26. (Original) A targeted vesicle composition according to Claim 17, wherein said vesicles comprise a gas selected from the group consisting of perfluorocarbons and sulfur hexafluoride.

27. (Original) A targeted vesicle composition according to Claim 26 wherein said perfluorocarbon gas is selected from the group consisting of perfluoromethane, perfluoroethane, perfluoropropane, perfluorobutane and perfluorocyclobutane.

28. (Original) A targeted vesicle composition according to Claim 27 wherein said perfluorocarbon gas is selected from the group consisting of perfluoropropane and perfluorobutane.

29. (Original) A targeted vesicle composition according to Claim 28 wherein said perfluorocarbon gas comprises perfluorobutane.

30. (Original) A targeted vesicle composition according to Claim 17 wherein said gas is derived, at least in part, from a gaseous precursor.

31. (Original) A targeted vesicle composition according to Claim 30 wherein said gaseous precursor has a boiling point of greater than about 37°C.

32. (Original) A targeted vesicle composition according to Claim 31 wherein said gaseous precursor comprises a perfluorocarbon.

33. (Original) A targeted vesicle composition according to Claim 32 wherein said perfluorocarbon is selected from the group consisting of perfluoropentane and perfluorohexane.

34. (Original) A targeted vesicle composition according to Claim 17 wherein said vesicles further comprise a bioactive agent that is different from said gas and said compound.

35. (Original) A targeted vesicle composition according to Claim 34 wherein said bioactive agent comprises a therapeutic agent selected from the group consisting

of genetic material, dihydroergotamine, heparin sulfate, tissue plasminogen activator, streptokinase, urokinase, hirudin, and mixtures thereof.

36-53. Previously cancelled.

54. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim + 17, wherein:

X^1 is $-C(=X^3)-N(R^8)-$;

X^2 is $C(=X^3)$;

X^3 is O;

R^1 is acyl of 18 carbons;

R^2 is H;

R^3 is ethylene;

R^4 is acyl of 18 carbons;

R^5 is H;

R^6 is a direct bond;

R^7 is ethylene;

R^8 is H;

P is PEG-3400; and

T comprises a peptide having the sequence CRGDC, wherein the two cysteines are linked together via a disulfide linkage.

55. (Canceled)

56. (Canceled)

57. (Canceled)

58. (Canceled)

59. (Canceled)

60. (Currently amended) A targeted vesicle composition according to Claim ~~55~~ 54, further comprising urokinase.

61. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 4 wherein:

R^1 and R^4 are acyl of about 18 carbons.

62. (Canceled)

63. (Currently amended) A ~~compound~~ targeted vesicle composition according to Claim 4 wherein:

R^1 is an acyl of about 18 carbons.

64. (Newly added) A targeted vesicle composition according to Claim 17, wherein said targeting ligand T is a peptide having from about 3 to about 20 amino acids.

65. (Newly added) A targeted vesicle composition according to Claim 64, wherein said peptide is cyclized by a linkage selected from the group consisting of sidechain-

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to-sidechain covalent linkages, end-to-sidechain covalent linkages, and end-to-end covalent linkages.